Claims

What is claimed is:

1. A method, comprising:

performing Principal Component Analysis (PCA) on a plurality of inputs to produce a plurality of PCA outputs;

coupling each of the plurality of PCA outputs to a plurality of output nodes;

multiplying each coupled PCA output by a weight selected for the coupled PCA output;

calculating a node output for each output node; and

selecting a maximum output from the plurality of node outputs.

2. The method of claim 1, further comprising the step of associating an output class with the maximum output.

3. The method of claim 2, wherein each output node corresponds to a class, and wherein the step of associating a class with the maximum output further comprises determining which output node produces the maximum output and associating the output class with the class corresponding to the output node that produced the highest output.

4. The method of claim 2, further comprising the step of calculating the weights.

5. The method of claim 4, wherein all inputs comprise a single vector that corresponds to a pattern, and wherein the step of determining the weights further comprises the steps of:

inputting at least one training vector;

computing, for each of the at least one training vectors, PCA outputs; and

determining the weights by using the PCA outputs associated with the at least one training vector.

6. The method of claim 5, wherein:

each output node corresponds to a class;

the step of inputting at least one training vector further comprises associating an input class with each training vector; and

the step of determining the weights by using the PCA outputs further comprises determining the weights so that an appropriate output node is selected in the step of selecting a maximum output, the weights being chosen so that input class matches the class corresponding to the appropriate output node.

7. The method of claim 1, wherein each PCA output comprises an eigenvector.

8. The method of claim 7, wherein each eigenvector has a dimension that is less than the number of inputs.

9. The method of claim 7, wherein each output further comprises an eigenvalue corresponding to the eigenvector of the output.

10. A classifier, comprising:

a Principal Component Analysis (PCA) device coupled to a plurality of inputs, the PCA device adapted to perform PCA on the plurality of inputs and to determine a plurality of PCA outputs;

a plurality of connections coupled to the PCA outputs and coupled to a plurality of output nodes, each connection

having assigned to it a weight, and each output node adapted to produce a node output by using the PCA outputs and the weights; and

a device coupled to the node outputs and adapted to determine a maximum node output and to associate the maximum node output with a class.

11. A system comprising:

a memory that stores computer readable code; and

a processor operatively coupled to said memory, said processor configured to implement said computer readable code, said computer readable code configured to:

perform Principal Component Analysis (PCA) on a plurality of inputs to produce a plurality of PCA outputs;

couple each of the plurality of PCA outputs to a plurality of output nodes;

multiply each coupled PCA output by a weight selected for the coupled output;

calculate a node output for each output node; and

select a maximum output from the plurality of node outputs.

12. An article of manufacture comprising:

a computer readable medium having computer readable code means embodied thereon, said computer readable program code means comprising:

a step to perform Principal Component Analysis (PCA) on a plurality of inputs to produce a plurality of PCA outputs;

a step to couple each of the plurality of PCA outputs to a plurality of output nodes;

a step to multiply each coupled PCA output by a weight selected for the coupled output;

a step to calculate a node output for each output node; and

a step to select a maximum output from the plurality of node outputs.